

The Misgav Ladach method: A step forward in the operative technique of caesarean section

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Abstract

Introduction: Caesarean delivery remains the most common intraperitoneal surgical procedure in obstetric and gynaecologic practice. Since time immemorial there have been countless efforts to improve the technique of caesarean section. One such innovative breakthrough technique is the Misgav Ladach method of caesarean of section. The objective of this trial was to compare the intraoperative and short-term postoperative outcomes between the conventional and the Misgav-Ladach technique for caesarean section.

Materials and method: The randomized prospective comparative study was carried out in the department of Obstetrics and Gynaecology, B.P Koirala Institute of Health Sciences, Dharan Nepal. Four hundred patients were randomized to either Misgav Ladach or the Conventional method of caesarean section. Only term pregnancies with singleton foetuses' were included whereas pregnancies with previous caesarean section were excluded from the study. The study period was from September 2001 to September 2004.

Result: There was not much difference in the demographic variables between the two groups. The age of the patients ranged between 18-40 years. The mean age of patients in Misgav Ladach and conventional group was 24.5 and 23.6years respectively. Foetal distress was the commonest indication for caesarean section followed by non progress of labour. The mean incision to delivery interval, operating time and blood loss in the Misgav Ladach group was 1 minute 30 seconds, 16 minutes and 350ml as compared to 3 minutes, 28 minutes and 600ml in the conventional group respectively. 3.5%of patients in the Misgav Ladach group showed febrile morbidity as compared to 7% in the conventional group.19% from conventional group and only 4%from Misgav Ladach group required added analgesia. Almost equal number of patients (10-12) in each group experienced significant headache.).0.1%in the Misgav group and 5% in the Conventional group required post operative blood transfusion. Four patients from the conventional group had their wound gaped. The number of neonates requiring intensive care was sixteen (8%) in the conventional group and 3 (1.5%) in the Misgav group.6.5% from conventional group and 2% from Misgav Ladach group required maternal intensive care admissions.

Conclusion: Misgav-Ladach technique has been be associated with shorter operative time, quicker recovery, and lesser need for postoperative medications, when compared with traditional caesarean section (12,13) It has also been shown to be more cost-effective (12) A further advantage of the technique may be the shorter time taken for the delivery of the child.

Caesarean delivery remains the most common intraperitoneal surgical procedure in obstetric and gynaecologic practice .Since time immemorial, right from the days of Julius Caesar there have been countless efforts to improve the technique of caesarean section. One such innovative breakthrough technique is the Misgav Ladach method caesarean of section.

Originally developed in the Misgav Ladach Hospital in Israel, the procedure devised by Dr. Michael Stark has a minimal surgical approach. The objective of this trial was to compare the intraoperative and short-term postoperative outcomes between the conventional and the Misgav-Ladach technique for caesarean section.

Materials and method

This was a prospective randomized comparative study where a total of 400 term pregnancies were studied prospectively (September'01 to September'04) in the Obstetrics and gynaecology department of B.P Koirala institute of health sciences, Dharan –NEPAL. The total number of cases were performed by the same surgeon (senior resident) and assisted by junior residents on duty. Patients with multiple pregnancies, previous caesarean were excluded from the study.

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Inclusion criteria were emergency or elective caesarean section after an estimated 37 full weeks of gestation. Most of the cases were done under spinal anaesthesia except for all the APH and a few for foetal distress which were done under GA. The patient was allowed to step out of bed at any time after 6 hours had passed from the operation. The patients under study were divided into two groups by randomization. The first group consisted of patients with caesarean section done by the Misgav Ladach technique whereas the second group included the patients who had undergone Caesarean section by the conventional method.

Group-1 Misgav Ladach Technique

1. Joel Cohen's incision - a straight transverse incision about 3 cms below a line joining the anterior superior iliac spines.
2. Minimal use of instruments - Using the index and third fingers, abdominal wall layers were separated by stretching. Parietal peritoneum was also opened in the same way.

3. Manual lateral stretching of the uterine incision with exteriorization of the uterus.
4. Single layer uterine closure.
5. Non-closure of the visceral and parietal peritoneal layers.
6. Closure of the abdomen in two layers - Skin and Fascia.

Group-2 Conventional method of caesarean section with:

1. Pfannenstiel incision.
2. Use of instruments/sharp dissection while opening the abdomen and extending the incision on lower uterine segment.
3. Double layer uterine closure.
4. Closure of the abdomen in layers except for the peritoneum.

In both the groups, skin was closed with non absorbable suture material and inspected on the 3rd postoperative day. A broad spectrum antibiotic was used for all patients.

Results

Table 1: obstetrical characteristics of the study population

	Misgav Ladach method n =200	Conventional n=200
Age	24.5 (18-40)	23.6 (18-40)
Gestational age	38.6 (37-42)	38.4 (37-42)
Primipara	54%	52%
Values are given as mean and range		
Indications		
Foetal Distress	93	91
Non progress	39	42
Breech	30	28
Transverse lie	8	9
Face presentation	3	2
Brow	1	0
APH	20	15
Eclampsia	6	10
BOH	0	1
Deep transverse arrest	0	2

Table 2: Showing operative findings

	Misgav Ladach n= 200	Conventional n=200
Incision delivery interval (mean)	1min 30sec	3min
Mean operating time	16 min	28 min
Mean blood loss	350ml	600ml
Intraoperative transfusion	1	2
No. of additional haemostatic sutures(mean)	1.2	2.6
No. of sutures required (mean)	2.4	3.4
No. of skin stitches (mean)	3.1	4.5
Anaesthesia		
Spinal	172	174
General	28	26

Table 3: Showing postoperative outcomes

	Misgav Ladach n = 200	Conventional method n=200
Mean day of mobility	1.2	1.8
Febrile morbidity	7	14
Added analgesic requirement	8	38
Postoperative transfusion	2	10
Significant headache	10	12
Serosanguinous discharge	2	9
Wound gaping	0	4
Hospitalisation days (mean)	3.4	4.1
Maternal mortality	0	0
Major morbidity	1	0
MICU admission	4	13
NICU admission	3	16

The main obstetrical characteristics of the study population are listed in Table-1. The primary indication for caesarean delivery in these patients is presented in Table-2. No significant differences occurred between the two groups regarding any of these parameters. The outcome measures evaluated are listed in Table-3 and 4. The Misgav Ladach technique took significantly less time to perform. There were significant differences between both groups in the incidence of febrile morbidity, added analgesic requirement, blood loss, wound complications, MICU and NICU admissions.

Discussion

As this operation is conducted very frequently, any attempt to reduce morbidity, even with relatively

modest differences for a particular outcome, is likely to have significant benefits in terms of costs and health benefits for the women. The main outcome measures were operating time, added analgesic requirement, postoperative fever, intra and post operative blood transfusions, wound infections and intensive care admissions both for the mother and baby.

The duration of operation was significantly different between the two groups with a mean of 16 min in the Misgav Ladach group and 28 minutes in the conventional group. The decrease in operating time shown in this study is almost half of the original method. Since the operating time is reduced, consequently the duration of anaesthesia is also

shortened. Incision delivery interval was less (1 min 30 sec) in the study group as against 3 min in the control group. This was safer if seen from the baby's point of view and can be invaluable in cases of foetal distress and cord prolapse where time is of essence.

Blood loss during a caesarean section is of concern. The performance of the Misgav Ladach method for caesarean section reduces the blood loss in comparison to the conventional method^{1,2}. In the present study the mean blood loss in Misgav Ladach technique was 350 ml as compared to 600ml in the conventional group.

A number of factors influence the intraoperative blood loss. Misgav Ladach technique is said to cause less bleeding in the abdominal wall. The explanation could be the less time taken in dissecting the subaponeurosis of the rectus sheath and the avoidance of troublesome bleeding from the perforating vessels which is often accompanied in the conventional method. The reduced operating time also influence the blood loss.

The exteriorization of uterus and delivery of the placenta also affect the overall blood loss^{3,4}; Manual removal decreases the duration of third stage and hence indirectly lessens the blood loss. Intraoperative placental delivery during caesarean section either manually or spontaneously is still controversial in the obstetric literature. Gol et al.⁵ suggested that manual delivery of the placenta is not associated with any significantly greater risk of operative blood loss, and this is probably due to clamping of the incisional angles and use of oxytocin, which are the most important factors in preventing excessive blood loss during caesarean section.

During this study the intraoperative blood loss was assessed by volumetric method. This method is easy, and we strongly believe that it is accurate enough to measure intraoperative blood loss. One layer suturing of the uterus results in less operating time, better haemostasis and less infectious morbidity than two layer closure⁶. However there is still some controversy regarding its impact on the next pregnancy, with some study showing similar rate of uterine dehiscence^{7,8,9} and one study showing a higher rate than the two layer closure¹⁰.

A recently published study comparing non closure and closure of the peritoneal layers during CS showed reduction of mean operating time from 44.3 to 33.4 minutes. The study showed economic benefits from less operating time, less suture cost, less anaesthesia needed and a shorter hospitalization¹¹.

In the Misgav Ladach technique only three skin sutures are required. With pinching of wound edges with Allis forceps in between the stitches. Conservation of suture material is important in settings with severe shortages, where women are often required to bring gloves, needles, suture material and gauzes for their delivery and related procedures. In the present study a mean of 3.1 for Misgav Ladach technique and 4.5 for the conventional method was required. The stitches were removed on the 5th postoperative day.

Regarding the post operative outcomes mobilisation was substantially earlier with the Misgav Ladach method. This was expected since the method is designed to minimize trauma. Significant difference was observed in postoperative febrile morbidity-3.5% in the Misgav group and 7.7% in the conventional group.

There was no significant difference between the two groups as far as spinal headache was concerned. One problem with spinals is the occurrence of significant headache for 2 or 3 days following the procedure. This is due to leakage of CSF through the hole made by the needle and it is more common in pregnant women because the raised CSF pressure, due to dilated epidural veins, causes a bigger leak. Use of the smallest gauge needle preferably 25 or even 26 gauge will help in overcoming this problem.

Wound Infection diagnosed by the presence of wound discharge and pyrexia of more than 38⁰C was diagnosed in all the 15 cases (13 in conventional and 2 in Misgav Ladach) of abdominal wound dehiscence. The diagnosis was confirmed by microbiological study in 10 cases and all these responded to the antibiotic according to sensitivity. Regarding the length of hospital stay & major morbidity, there was no significant difference. Surprisingly there was no maternal mortality in spite of the fact that more than 70% of the patients had Hb below 8.5 gm% and 46 patients had come in a very bad shape. Out of which 12 had come in exsanguinated state. There were a total of 11 admissions in the neonatal intensive care unit. 8 out of 12 NICU admissions were the APH babies, 2 babies had gone just for observation as they were born to diabetic mothers and the remaining 2 were growth retarded babies born to eclamptic mothers.

Conclusion

Misgav-Ladach technique) has been associated with shorter operative time, quicker recovery, and lesser need for postoperative medications, when compared with traditional caesarean section^{12,13}. It

has also been shown to be more cost-effective¹². A further advantage of the technique may be the shorter time taken for the delivery of the child.

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